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BUSKOP LAW GROUP, P.C.
1776 YORKTOWN
SUITE 550
HOUSTON, TX 77056

EXAMINER

ALEXANDER, MICHAEL P

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/783,932

Applicant(s)

WATSON, DANIEL

Examiner

Michael P. Alexander

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 22 is/are pending in the application.
- 4a) Of the above claim(s) 19-21 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

This application contains claims directed to the following patentably distinct species of the claimed invention:

bronze

Cobalt

Silver and silver alloy

Nickel and nickel alloy

Chromium and chromium alloy

Vanadium and vanadium alloy

Tungsten and tungsten alloy

Titanium and titanium alloy

Scandium and scandium alloy

Tin

Platinum

Palladium

Gold and gold alloy

Plated metal

Lead

Plutonium

Uranium

Zinc

Iron and iron alloy

Magnesium and magnesium alloy

Gallium

Gallium arsenide

Selenium

Silicon

Calcium

Calcium fluoride

Fused silica materials

Germanium

Indium

Indium phosphide

Phosphorus

Laminate disposed on ceramic

Laminate disposed on wood

Laminate disposed on polymer

Cermet

Metal carbide

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-18 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Furthermore, claims 14 and 18 are generic to a plurality of disclosed patentably distinct species comprising:

- 14 hydrogen
 Nitrogen
 Oxygen
 Helium
 argon
- 18 double-walled insulated chamber
 vacuum chamber
 vacuum-insulated chamber

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

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Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Christian Heausler on 16 November 2005 a provisional election was made with traverse to prosecute the invention of nitrogen in claim 14, double-walled insulated chamber in claim 18 and cermet in claim 22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-21 and 23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

The disclosure is objected to because of the following informalities: "stresss" in line 4 of paragraph 0006 should be "stresses" and "ceramet" in line 9 of paragraph 00032 should be "cermet". Appropriate correction is required.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the heat exchanger must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 11, 15, 30, 32, 34, 36, 38, 40, 42 and 44. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 28a and 28b. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "18" has been used to designate both valve and first target temperature. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top

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margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because 20, 22, 24, 26 and 28 in the specification refer to temperatures and temperature rates and 20, 22, 24, 26 and 28 in the drawing refer to parts of the thermal control apparatus. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 22 is objected to because of the following informalities: "ceramet" should be "cermet". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "metal" in claim 1 is used by the claim to mean "gallium arsenide, calcium fluoride, fused silica materials, indium phosphide, cermet or metal carbide", while the accepted meaning is "any of various opaque, fusible, ductile, and typically lustrous substances that are good conductors of electricity and heat, form cations by loss of electrons, and yield basic oxides and hydroxides; *especially* : one that is a chemical element as distinguished from an alloy." The term is indefinite because the specification does not clearly redefine the term.

Claims 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "tank" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "tank" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-11, 15-18 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Bryson (Cryogenics).

Regarding claim 1, Bryson teaches a thermal process for treating a metal to improve structural characteristics of the metal comprising: placing a metal with a metal temperature within a thermal control apparatus comprising a chamber with a chamber temperature (pages 69-75); introducing a cryogenic material into the thermal control apparatus to decrease the metal temperature, while preventing over-stressing of the metal, to a first temperature ranging from –40 degrees F and –380 degrees F at a first temperature rate inherently ranging from 0.25 degrees per minute and 20 degrees per minute (page 50); stopping the introduction of the cryogenic material into the chamber

once the first target temperature is reached (page 51); increasing the chamber temperature to room temperature (page 52); and increasing the metal temperature to room temperature at a rate inherently from 0.25 degrees per minute and 20 degrees per minute (page 52), inherently resulting in a treated metal without fractures.

Regarding claim 2, the method of Bryson would inherently affect malleability, flexibility, ductility, hardness, elasticity, and/or strength.

Regarding claim 4, Bryson teaches repeating the cryogenic process numerous times in order to relieve stress after machining (pages 65-68), which would be introducing a cryogenic material into the thermal control apparatus to decrease the metal temperature (page 50), while preventing over-stressing of the metal, to a third target temperature at a third temperature rate (page 50); stopping the introduction of the cryogenic material into the chamber once the third temperature rate is reached (page 51); increasing the chamber temperature to a fourth target temperature (page 52); and increasing the metal temperature to the fourth target temperature at a fourth temperature rate (page 52), resulting in the treated metal without fractures. With respect to the limitation that the third target temperature is colder than the first target temperature, the Examiner asserts that the temperature of at least one of the successive cycles on page 67 would be lower than the previous cycles by at least a small amount due to the smaller size of the part after machining which would cause a slightly faster cooling rate and lower resulting temperature.

Regarding claims 5-6, Bryson teaches (pages 65-68) repeating the cryogenic process numerous times in order to relieve stress after machining (pages 67).

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Regarding claims 7-8, Bryson teaches (page 51) permitting the metal to soak for 24 to 30 hours.

Regarding claims 9-10, Bryson teaches (page 52) permitting the metal to soak at room temperature for about 48 hours.

Regarding claim 11, the repeating of the thermal process would inherently affect malleability, flexibility, ductility, hardness, elasticity or strength.

Regarding claims 15-17, the temperature rates would inherently be affected by the mass of the metal in the process of Bryson.

Regarding claim 18, Bryson teach (page 72) that the chamber would have an inner wall and an outer wall (i.e. double-walled insulated chamber).

Regarding claim 22, Bryson teaches (page 40) that fine carbide particles would be present, which would make the metal a cermet, a cermet being a physical mixture of metal and ceramic.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryson as applied to claim 1 above, and further in view of Weisend (Handbook of Cryogenic Engineering).

Regarding claim 12, Weisend teaches (page 413) providing heat exchangers for cryogenic equipment in order to conserve refrigeration. It would have been obvious to one of ordinary skill in the art to modify the method of Bryson by providing a heat exchanger in the chamber to provide a cryogenic vapor in order to the tank in order to conserve refrigeration as taught by Weisend.

Regarding claim 13, the heat exchanger of Weisend would inherently absorb heat from the chamber into the heat exchanger forming a cryogenic vapor that fills the tank.

Regarding claim 14, Bryson teaches (page 29) using liquid nitrogen as the cryogenic material, which would evaporate to form a cryogenic vapor.

Claims 1-3, 7-10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Groll (US 6,544,669) in view of Bryson (Cryogenics).

Regarding claim 1, Groll teaches (col. 5 lines 4-44) a thermal process for treating a metal to improve structural characteristics of the metal comprising: cryogenically cooling to less than -100 degrees F at a temperature rate of 1 degree per minute, holding at less than -100 degrees F, increasing the chamber temperature to a second target temperature of greater than 350 degrees F at about one degree per minute. Groll

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does not specify using a thermal control apparatus comprising a chamber and does not specify stopping the introduction of the cryogenic material into the chamber once the first target temperature is reached, inherently resulting in a treated metal without fractures.

With respect to the thermal control apparatus comprising a chamber in claim 1, Bryson teaches (page 70-75) teach a method of cryogenic processing using a thermal control apparatus comprising a chamber in order to control the temperature and insulate the chamber. It would have been obvious to one of ordinary skill in the art to modify the method of Groll by using a thermal control apparatus comprising a chamber in order to control the temperature and insulate the chamber as taught by Bryson.

With respect to stopping the introduction of the cryogenic material into the chamber once the first target temperature is reached in claim 1, Bryson teach (pages 49-51) introducing liquid nitrogen into the chamber and stopping the introduction once the target temperature is reached in order to slowly ramp down the temperature. It would have been obvious to one of ordinary skill in the art to modify the method of Groll by introducing liquid nitrogen into the chamber and stopping the introduction once the target temperature is reached in order to slowly ramp down the temperature as taught by Bryson.

Regarding claim 2, the method of Groll would inherently affect the malleability, flexibility, ductility, hardness, elasticity and/or strength of the metal that would be treated.

Regarding claim 3, Groll teach (col. 5 lines 4-15) that the first and second temperature rates would be 1 degree per minute.

Regarding claims 7-8, Groll teach (col. 5 lines 4-15) permitting the metal to soak for one to sixty hours.

Regarding claims 9-10, Groll teach (col. 5 lines 4-44) letting it soak at the second temperature for several hours for tempering purposes.

Regarding claim 15, the first and second temperature rates would inherently be affected by the mass of the metal in the method of Groll.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5 and 7-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3-11 of copending Application No. 10/784,071. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 and 3-11 of 10/784,071 teach of the limitation of claims 1-5 and 7-16 of the instant application.

Claims 1-5, 7-16 and 22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 10-17 and 21 of copending Application No. 10/783,934. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 10-17 and 21 of 10/783,934 teach all the limitations of claims 1-5, 7-16 and 22 of the instant application.

Claims 1-5, 7-17 and 22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 and 22 of copending Application No. 10/783,933. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-14 and 22 teach all the limitations of claims 1-5, 7-17 and 22 of the instant application .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

m/q
mpa

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700